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ABSTRACT

Tropical forests provide the world with many products and an incredible diversity of plant and animal life. These forests also provide watershed areas, soil control, climate regulation, and winter homes for migrating birds from North America. It is believed that about 40% of tropical forests have already been destroyed in the last 20-30 years, prompted by social and economic pressures. To curtail this trend, attitudinal and institutional changes in the industrialized nations of the world must be made to preserve the economic and environmental security of the world. Education can create an awareness of this issue from which decisions can be formulated and appropriate actions taken. This document contains six activities for intermediate and middle school students including: (1) "Tropical Pursuit"; (2) "Tropical is Topical"; (3) "Follow the Yellow Brick Road"; (4) "Monkey See, Monkey Do"; (5) "A Tropical Tail"; and (6) "May the Forests be With You." Each activity provides a brief description, a concept statement, objectives, background information, a list of relevant subject areas and skills, a list of materials, and the procedures used to conduct the activity. (CW)

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TROPICAL FORESTS

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GLOBAL TOMORROW COALITION
Population • Resources • Environment

SE 049 605

SUMMARY SHEET - TROPICAL FORESTS

In this curriculum guide, the generic term of "tropical forests" will denote the green band of land around the Equator, between the tropics of Capricorn and Cancer. There are considered to be four main types of tropical forests; evergreen, moist, deciduous and open dry woodlands. Evergreen forests, most commonly referred to as rainforests, receive about 4,000 mm of rainfall per year, and have an entirely closed canopy. Moist forests receive 2,000 mm rainfall per year, but lack the ecological complexity of the evergreeen forests. Deciduous forests recieve 1,500 mm of rainfall per year, with a 4-6 month dry season. Open dry woodlands receive less than 1000 mm of rainfall per year and can even experience drought conditions.

Tropical forests only represent 8% of the earth's land surface. Yet the tropical forests provide the world with medicines, foods, industrial substances and an incredible diversity of animal and plant life. Not only do we depend on the forests for wood products, rattan, gums, oils, resins, quinine, charcoal, coffee, bananas, rubber, but the forests also provide watershed areas, soil control, climate regulation and a winter home to migrating North American birds.

Tropical forests once covered approximately 6 million square miles of the earth's surface, an area twice the size of the United States. Scientists believe that approximately 40% of the forests have already been destroyed, mostly in the last 20-30 years. The destruction has been prompted by growing economic and social pressures in the developing nations, where the tropical forests are found. Searching for firewood, cutting hardwood to sell to lumber companies, planting cash crops, grazing cattle and building roads to nowhere - all have the same effect - that of deforestation.

Just like the plants of the desert, most of the nutrients and water in the tropical ecosystem are held in the plants and canopy, but not in the soil itself. Without the protective vegetation, the soil is low in nutrients and productivity. 75% of the nutrients are in the living plants and trees themselves, 17% in the decaying debris and only 8% in the soil itself. Most of the nutrients are leached out by the large quantity of water present in the forest. However, without the vegetation, water, land and nutrients are easily washed away. This fragile forest ecosystem can easily become a barren desert, with little hope for returning to its former self.

With the growing realization that the United States is intricately linked to the exotic tropical forests, especially through our dependence on the forests for medicinal, agricultural, industrial and environmental resources, there exists a growing concern in the United States about the welfare of the tropical forests. A closer look reveals how we, as citizens of the United States, may even be contributing to the devastation in the tropical forests, by eating hamburgers from certain fast food restaurants, furnishing our homes with teak or mahogany, importing products of rare and endangered species. Attitudinal and institutional changes in the United States and other industrialized nations must be made, in order to preserve our economic and environmental security.

Education creates an awareness of the issue, from which decisions can be formulated and appropriate actions taken. For many, the aesthetic value of the tropical forests is enough to warrant their survival. Others may want more information and reasoning. However, the conclusion is ultimately the same. Tropical forests are an invaluable global resource and their fate will be determined by all of us.

TROPICAL PURSUIT

Students will visualize a tropical forest by writing descriptive words on the blackboard, drawing their own pictures and observing actual pictures of a tropical forest. (40 min.)

CONCEPT:
Tropical forests are unique and highly diverse ecosystems.

OBJECTIVES:
(1) Identify characteristics of tropical forests.
(2) Define ecosystem.
(3) Depict a tropical forest.
(4) List at least 3 unique aspects of tropical forests.

BACKGROUND:
Introductory environmental studies

SUBJECT
- Art
- Language Arts
- Geography

SKILLS
- recall
- definition
- comparison
- creativity

MATERIALS
- drawing paper
- crayons/markers
- blackboard
- world map/globe

PROCEDURE:
1. Introduce students to the concept of a tropical forest with familiar words and concepts. Begin with writing "FOREST" on the board and ask students to think of adjectives and adverbs that apply to "FOREST". Write or have the students write their ideas on the board under the word. Then, write "TROPICAL" before the word "FOREST". Brainstorm with students about descriptive words, write them under the word "TROPICAL".

2. After collecting 10-15 descriptive words, find tropical forest areas on world map with

students. Clarify definition of a tropical forest and give background facts about the ecosystem.

3. Based upon the students' descriptive words and background information, instruct students to draw their image of a tropical forest. After completed, have the students volunteer to discuss how their drawings exhibit the characteristics of a tropical forest ecosystem.

4. Show students actual pictures, slides or film of a tropical forest. Check understanding by asking the students to compare their drawings and the actual scenery of a tropical forest. Display drawings in classroom.

+ Find out which animals at your local zoo are native to tropical forests. Assign students to learn more about these specific animals, then visit them at the zoo.

TROPICAL IS TOPICAL

Give students a short "quiz" about their personal use of resources from the tropical forests, classify resources into agricultural, industrial, medicinal and environmental categories on the blackboard, and discuss importance of tropical forests to everyday life. (30 min.)

CONCEPT:
People depend upon the valuable resources of the tropical forests.

OBJECTIVES:
(1) Identify personal use of resources.
(2) Classify resources into 4 categories.
(3) Relate students' lives to existance of forests.

BACKGROUND: See "Tropical Pursuit".

SUBJECT
- Geography
- Economics
- Science

SKILLS
- recall
- classification
- analysis

MATERIALS
- paper
- pens/pencils
- blackboard

PROCEDURE:
1. Ask each student to write down a "yes" or "no" answer on a his/her own piece of paper, in response to the following questions?
a) Have you ever eaten a banana or pineapple?
b) Do you have any household objects made from rattan?
c) Have you ever eaten a Brazil Nut?
d) Have you ever seen a warbler, a swallow, a gull or sandpiper?
e) Can you think of three items that you have used today, which are made of rubber?
f) Do you know someone who drinks coffee or tea?
Take a poll of the students' answers for each question. All these acts depend on the tropical forest ecosystem. Why?

2. Define resource. Give facts about value of tropical forests as a resource. Ask students to categorize resources into agricultural, industrial, medicinal, and environmental uses on the blackboard.

3. Based on information given about tropical forests, ask students why people in the United States are concerned about the future of the world's tropical forests? How does the well-being of a tropical forest directly affect each student?

+ Ask each student to bring one item, which comes from a resource in the tropical forests, to the classroom. Students can build a display of resources from the tropical forests and keep adding to it.

FOLLOW THE YELLOW BRICK ROAD

By role-playing characters, students will help each other learn about the causes of tropical deforestation. As a group, they will decide the fate of an area, for which a paved road is planned. (45 min.)

CONCEPT:
Tropical forests are being overdeveloped rapidly, due to economic and social pressures.

OBJECTIVE:
(1) Define development.
(2) Identify reasons for development.
(3) Evaluate short and long-term results.

BACKGROUND: "Tropical is Topical".

SUBJECT	SKILLS
• Social science	• communication
• Natural science	• problem solving
• Economics	• analysis
• Government	• evaluation

MATERIALS
- Character Cards *
- world map/globe

PREPARATION:
1. Copy and cut Character Cards.

PROCEDURE:
1. Define development. Explain how the tropical forests are being destroyed through overdevelopment.

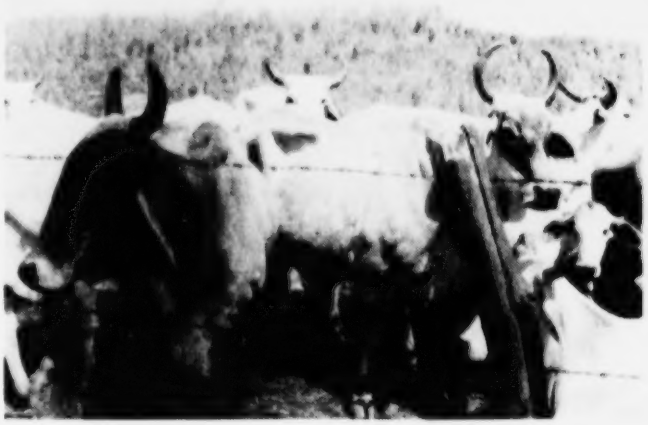
Explain the activity:
a) You are all citizens of Emerald City, which is surrounded by the Emerald Forest, a lush tropical forest.
b) A decision will be made today as to whether a paved road will be built into the Emerald Forest.
c) Each of you will act as the person on your Character Card.
d) Those of you who are bankers will listen as the other citizens present their opinions. Then you will decide whether to lend money to pave the road or not. You may ask the other citizens questions that will help your decision.
e) You may work individually or in groups to prepare your opinions.
f) Review the "rules" for role-playing: a) act as though you are the character on the card, even if you do not personally agree, and b) respect the other students' opinions.

FOLLOW THE YELLOW BRICK ROAD, con't.

2. After the students are prepared with opinions or questions, gather them together. Instruct the citizens to first introduce their character, then to present their opinion to the group of bankers.

3. After hearing all the opinions, instruct bankers to meet and decide whether to fund the project based on the testimony of the citizens. After their decision has been reached and announced, allow students to express their personal opinions about the development of the tropical forests.

4. Explain the differences between short and long-term benefits of development. Ask the students to think of a development project in their community. Compare the short/ long-term benefits of this project.



+ Adopt a particular tropical forest or country with tropical forests. Write the government of the country for information and plans for future development of the area.

FOR: FOLLOW THE YELLOW BRICK ROAD *COPY & CUT* Character Cards

HAMILTON BURGER You own a cattle ranch on land that was a tropical forest. You sell beef to fast food restaurants in the U.S. at low prices. You will move soon as the cleared land becomes unproductive after 2 years of cattle grazing.	DIANE or DON DIRECTOR You are a tour guide and have been leading people into the tropical forests for five years. Your clients want to see the plants and animals of the forest, but complain about the difficulty of exploring the forests without good roads.
DR. DOLITTLE, M.D. Your research on a cure for a disease depends on a plant found in the tropical forests. You have not been able to find this plant in any other forest, except this one. The Indians showed you where to find it and how it can cure sicknesses.	BILL or BETTY BIRDER You are an ornithologist, a person who studies birds. You know that many birds migrate south in winter, but fewer are returning in spring. More building in the forests may reduce the bird population in the United States even more.
SID or SADIE SETTLER You recently moved with you family away from the crowded capital city to a cleared area of the forest. You have planted some crops, but they do not grow very well. To keep your family warm, you must cut down more trees for firewood.	SAMUEL or SAMANTHA SEEDLING You have been planting crops on a steep hill in a cleared area of the forest for five years. Each year, the amount of edible crops gets smaller. Last year, much of the topsoil was washed away in a storm. You may move back to the city soon.
MR. or MRS. SLASH N. BYRNE You own a timber company that sells the wood of the tropical trees. You clear an area, then sell the land to farmers or ranchers, and move to another forest. It has been hard getting the wood to the city without good roads.	MAYOR RAFAEL COULSANO You are the mayor of the country's overcrowded capital city and want people to move away, but they won't move to the jungle. You hope that more areas of the country will be developed to encourage people to leave the city.
PERES VALDEZ You are a member of the Kuna tribe, who have lived in the tropical forest for many years. You get food, medicine and building supplies from the forest. Many of your people have died, because of disease brought by the settlers.	ROBERTO or ROBERTA WATT You are the president of an energy company and believe that there will be an energy shortage with a growing population. You want a dam built on the river running out of the forest. The dam will take 10 years to build with 1,500 workers.
CAPTAIN MARCH You are a army Captain and are worried that other countries may attack your country soon. You want to defend the border with tanks and trucks, but equipment cannot get through the dense tropical forests.	HARRY or HARRIETTE HUMANE You belong to an environmental club concerned about animals. Many forest animals, like the jaguar, are being killed and their pelts sold to make coats. You feel that more animals will be killed, if it is easier to get into the forests.

FOR: FOLLOW THE YELLOW BRICK ROAD *COPY & CUT* Information Cards

YOU ARE A BANKER. You must decide whether to loan money to Emerald City for a road to be built through the Emerald forest. Please meet with the other bankers.	YOU ARE A BANKER. You must decide whether to loan money to Emerald City for a road to be built through the Emerald forest. Please meet with the other bankers.
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MONKEY SEE, MONKEY DO

By acting out a story as plants and animals of a tropical forest, students will learn about the interdependence of the ecosystem and the effects of deforestation. (45 min.)

CONCEPT:
Plants and animals of the tropical forests are dependent on each other for survival.

OBJECTIVE:
(1) Define deforestation.
(2) List 3 effects of deforestation.
(3) Define endangered and extinct.

BACKGROUND:
Introductory environmental studies and "Tropical is Topical"

SUBJECT
- Natural science

SKILLS
- inquiry
- comparison
- theorization
- evaluation

MATERIALS
- cactus plant
- Tropical Tails *
- Character Cards *
- 25 - + ft. rope
- blackboard

PREPARATION:
1. Copy and cut Character Cards.

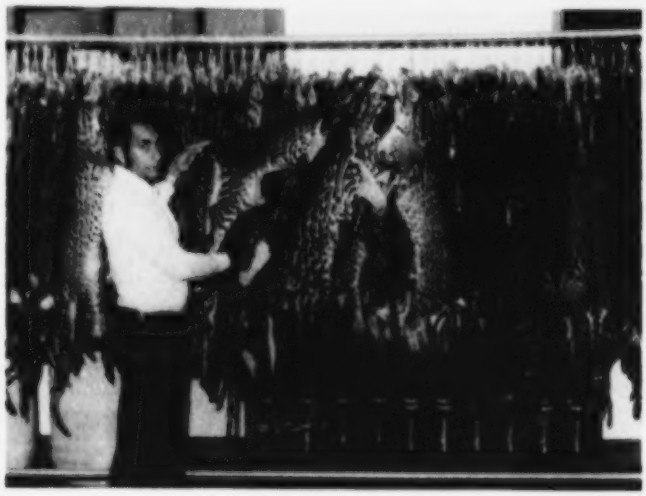
PROCEDURE:
1. Display a cactus. In a simple manner, this cactus plant can be compared to a tropical forest plant. Ask students why the cactus is like a tropical forest plant. e.g. Just like the plants of the desert, most of the nutrients and water from the tropical ecosystem are held in the plants, the canopy of the forest, not in the soil itself.

2. Define deforestation. Explain, that in a desert, plants and animals have adapted to the dry and harsh soil, just as the tropical plants have adapted to the forest ecosystem. Ask students to be thinking about the effects of deforestation on the animals and remaining plants of the tropical forests as they play the next game.

a) Lay the rope on the ground in a circle. Anchor one end of rope to the ground - you will need to pull the other end, so that the circle will become smaller and smaller. This rope circle represents the tropical forest ecosystem.
b) Distribute Character Cards.
c) Explain that as you read "Tropical Tails", you will be reading a clue that identifies their character. Once they hear that clue, they will identify which plant or animal they are and step into the circle.
d) As you begin to read page 2 of the story, which depicts deforestation, start to pull the rope in slowly.
e) The students must stay inside the rope or they will not be able to survive. Once the area becomes too small, some of the students will begin falling out. (Remind students not to push or shove!) Once they have fallen out, they should sit by the storyteller.
f) Keep pulling the rope until finished with the story.

MONKEY SEE, MONKEY DO, con't.

3. Draw the students together again and discuss what they have learned from the game. List 3 effects of deforestation? Define endangered and extinct. Give examples. Why will the extinction of tropical plants and animals be a loss to the whole world?



+ Research a certain endangered plant or animal that lives in the tropical forests. How did these plants and animals become endangered? What is being done to protect or help these species?

FOR: MONKEY SEE, MONKEY DO *COPY & CUT* Character Cards

PERIWINKLE Doctors in the U.S. have used Periwinkle to cure forms of cancer.	BLACK HOWLER MONKEY These noisy monkeys can be heard up to 3 miles away.
ORCHID A flower, which grows on other trees, and is pollinated by bees.	RATTAN A climbing plant used to make furniture, a popular item in the U. S.
GIANT HARPY The most powerful of the world's eagles, hunts monkeys and birds.	LEAF LITTER TOAD A toad that protects itself by pretending to be a dead leaf on the forest floor.
BRAZIL NUT The nuts of this tree are popular in the U.S., but can only grow in a tropical forest.	MORPHO BUTTERFLY Bright blue in color with a wingspan of up to seven inches.
ANTEATER A toothless mammal, with a long, sticky tongue and claws and eats up to 30,000 ants a day.	THREE-TOED SLOTH The sloths feed in the treetops, hanging upside down by their clawed feet.
LEAF-NOSED BAT A mammal that eats the year-round supply of fruit and roosts in the trees.	BLACK CORMORANT A bird that dives into the water to find fish to eat.
BOA CONSTRICTOR This snake grows up to 15 ft. in length and kills its victims by suffocation.	WATER OPPOSUM An aquatic marsupial, which is any animal that has a pouch for carrying babies.
JAGUAR This animal is noted for its fast speed and spotted coat.	PUMA This cat can leap 20 feet in one bound and jump upwards 15 feet.
TARANTULA This spider injects a poison into its prey with sharp fangs.	ARMADILLO The only living mammal to have a shell, which is actually not solid, but made of pieces.
SPIDER MONKEY This monkey uses a tail like a "fifth hand" - it helps the monkey swing through the trees.	BASILISK LIZARD Sometimes called a "water skimming" lizard, this reptile can walk across water.
DARWIN'S FROG This frog has a pointed nose. The male frog keeps tadpoles protected in his mouth.	ANACONDA A river snake that can grow up to 18 ft. long and weigh 200 lbs.
TAPIR A cross between a rhino and a hippo, the tapir searches for for food in the forest rivers.	CAIMAN An alligator that eats young Anacondas, but is often eaten itself by the adult snake.
TOUCAN A brightly colored bird with a large beak makes a loud sharp shrieking noise.	HOATZIN A bird that lives near streams, which it dives into and swims away when frightened.
ARMY ANTS These ants can move in groups as large as 100 yards long at a rate of 38 yards per hour.	POISON-ARROW FROG The Indians use the poison of this brightly colored frog on their arrows.

A TROPICAL TAIL

In the tropical forest, the trees stretch to the sky - 150 ft. high and taller - as tall as some of the buildings in the city. The forest is like a building. Different animals and plants live on different stories of this building. Some live in the basement, some live in the middle and some live in the attic. They all depend on this building - the trees of the forest - to survive. To have a place to build their home and to find their food...

An animal swings through the tree tops and can be heard 3 miles away. (HOWLER MONKEY) These monkeys often howl cries of warning when a certain bird flies by, since it is so big - it carries away small monkeys for food. (GIANT HARPY EAGLE) Another animal with greenish-colored long hair has been hanging upside down in the treetops for so long, that it cannot even walk on the ground anymore. (THREE-TOED SLOTH) Suddenly, a bright blue flash is seen through the leaves. It has wingspan of 7 inches. (MORPHO BUTTERFLY) Roosting in the trees and waiting for the night, this certain mammal flies through the air searching for fruit. (LEAF-NOSED BAT)

The trunks of the tall trees support life also. A certain plant, used to make furniture, winds its way around a tree's trunk. (RATTAN) Something else is wrapped around a tree, but suddenly, it moves! It is about 15 feet long and suffocates its prey. (BOA CONSTRICTOR) As the boa glides slowly down the tree, a bird with a brightly colored beak shrieks loudly and flies away with a flurry. (TOUCAN) Another animal heeds the warning and makes an easy escape by using its "fifth hand" to swing through the trees. (SPIDER MONKEY) As it does, it knocks a branch and off falls a nut, a type which is popular to eat in the United States. (BRAZIL NUT)

A beautiful flowering plant drapes itself around the trees of the forest. Its flowers are pollinated by bees. (ORCHID) Down on the forest floor, a large cat prepares to jump 15 feet up to take a nap on one of the tree branches. (PUMA) A leaf on the ground suddenly jumps away! This animal had disguised itself as a dead leaf. (LEAF LITTER TOAD) It had been moitionless, until an army of insects measuring 100 yards long came marching by, taking everything in its path along too. (ARMY ANTS) Another animal lumbers along, unaware of the commotion. It has poor eyesight, but uses its long nose to look for termite and ant hills to find its next meal. (ANTEATER)

Another animal is also looking for food. It is small, but poisons its prey with venom from its sharp fangs. (TARANTULA) A small animal with a pointed nose hops away. The male carries his babies in his mouth until they hatch. (DARWIN'S FROG) Even larger animals on the forest floor need protection too, such as the only living mammal to have a shell. (ARMADILLO) More flowers grow along the ground. One of them has been found by doctors to be helpful in curing cancer. (PERIWINKLE)

Along the river banks, the biggest cat in the forest can barely be seen with its spotted coat. (JAGUAR) It watches another animal, a cross between a rhino and a hippo, as it searches in the water for food. (TAPIR) Also, looking for food is a 200 lb., 18 ft long reptile as it swims through the water. (ANACONDA) It is looking for an animal that looks like an alligator, which it can suffocate and then eat. (CAIMAN) Sensing the danger, a small bird dives into the water and swims away. (HOATZIN)

A TROPCAL TAiL, con't.

A brightly colored amphibian watches calmly, for the colors advertise his or her deadly poison, which the Indians use on their hunting arrows. (POISON ARROW FROG) A reptile "walks" across the water with amazing speed and a strong tail to skim along the top. (BASILISK LIZARD) The lizard startles an animal, a marsupial, who is resting by the water with its babies in its pouch. (WATER OPPOSUM) A bird flies overhead, as it searches the river for food. It dives in to catch a fish. (BLACK CORMORANT)

The usual daily activity of the animals and plants in the forest is interrupted by a very strange sound. The animals look up and listen. Even the Howler Monkeys are quiet for the moment. Shhhhh. There it is again. Chop. Chop. Chop. Silence...and then, a huge crashing sound, which sends the forest animals into a flurry of activity. Then another crash....and another. With the falling trees, the orchids and rattan plants that grow around them are pulled down too. The forest floor becomes littered with plant material. The Three-toed Sloth, irritated at having to move, slowly swings to another limb with a baby clinging on to the long, green hair. The Harpy Eagle flies to find another tree in which to rest.

The sound of the cutting has become common in the forest. A new species of animal is living in the forest. They look like the people of the Indian tribe, who have lived here for hundreds of years, but they do not act like them. The animals gaze intently at the new species through the cover of the trees. They have built a home in the cleared spot of the forest. More trees are cut down.

The Spider Monkey hangs from a limb and watches as this newcomer places something in the ground - where the trees use to grow. More of this species arrives. More trees are cut down. The smoke from logs burning at night hangs in the forest. More things are placed in the ground by the species, but the ground remains bare. More trees come crashing to the ground. The Giant Anteater lumbers to its favorite termite nest, but can no longer find the tree. It wanders away.

One day, a louder sound is heard. It is not a chopping sound, but is more like a buzzing. The Puma is awakened from its nap, jumps to the ground and lets out a low growl. Another tree thunders to the ground dragging other plants with it. A Tarantula scurries away. The trees are coming down faster these days. The species brings in a big animal with round legs that growls constantly. Even the Jaguar is scared of it. They feed it the huge logs from the fallen trees and it rolls away. Its tracks are strange. The animal does not pick up its feet. Instead of stepping over the Periwinkle flower, it just runs right over it.

The Leaf-nosed Bat is having a harder time finding fruit. Many animals are moving further into the forest. The river that winds through the forest begins to fill up with soil, which is washed from the open ground by the heavy tropical rains. The Caiman cannot sink himself in the water anymore to hide from the Anaconda.

The noisy Toucan is silent as it listens to the chatter of the new species. It is still cutting down the trees. The more it cuts, the more it seems to want. It is building more homes. It brings more big animals with round legs to the forest. They no longer leave tracks. A way through the forest has been built for them. They travel along this wide path and come and go, night and day. Sometimes, they bring more of the species too.

A TROPICAL TAIL, con't.

The animals move further into the forest, though there is not much further to go. They can no longer count on the forest for food or a home. It becomes harder and harder for the animals to survive. The river has dried up. Even though it still rains very hard, the water just runs down the hillsides.

The Boa Constrictor looks up. It smells the now familiar smoke of fire, but now the fire seems to be coming closer. It crackles and a red glow can be seen on the horizon. The forest has been set on fire. It burns for days. When it is over, only blackened stumps of trees remain. A few animals move among the rubble, unsure as to their new surroundings. The only other sound is that of the new species as its voices carry through the treeless land.

MAY THE FORESTS BE WITH YOU

In a group problem-solving session, students will apply their knowledge of tropical forests towards formulating a plan for the conservation of a tropical forest in the fictitious country of Shyam. (40 min.)

CONCEPT:
Effective environmental decisions require consideration of scientific, economic, political, ecological and aesthetic values.

OBJECTIVES:
(1) Define sustainable.
(2) List 3 ways to manage natural resources.
(3) Develop plan for use and conservation of forests.

BACKGROUND:
See "Tropical is Topical", "Follow the Yellow Brick Road", and "Monkey See, Monkey Do"

SUBJECT
- Social Science
- Math

SKILLS
- communication
- recall
- analysis

MATERIALS
- blackboard
- paper/pens

PROCEDURE:
1. Define sustainable. Are the resources of the tropical forests being used in a sustainable manner now? Discuss with students ways of managing a natural resource. List at least three ideas on the board.

2. Begin next activity by explaining that you will be giving the students certain information about a tropical forest in the country of Shyam. Divide the students into groups of 5-6. As a group, they will be responsible for presenting a plan on conserving the forest.

3. Give the following information to write down and/or copy it on the blackboard:
a) The tropical forest is located in the small country of Shyam.
b) The size of the tropical forest is approximately 1/3 size of Ireland with rocky soil and steep hills.
c) 1,500 Indians live in the forest.
d) Two main rivers flow from the forest.
e) An endangered species of birds live in the tropical forest.
f) A road from Shyam's capital was recently built into the forest.

4. The groups of students should now work together to develop a plan for this tropical area. Though they must base their plan on these facts, the students can also draw upon other information or characteristics of the tropical forests.

5. After a planning period of 10-15 minutes, have each group of students present their plan to the rest of the class. Allow other students to ask questions of the groups and to discuss other options.

+ Develop an exchange system between your students and students in a tropical country.